



HOW TO...

Create 3D displacement effects

How do you add words to a part of a picture with an unusual shape in such a way that people can't guess the effect isn't natural? Adam Banks explains how your image editor can help you find the right words

Adding text to a image so that it looks like it has been printed on a particular object is an excellent effect, but it can be a fiddly one to produce. There are two issues involved in making it happen. First the light and shade of the background and text need to match; the blending mode will help you with this. Second, the text needs to distort to match the background, and for this warp distortion can help.

However, some backgrounds are tricky. In the example here, we are trying to add a tattoo to a torso. No preset warp envelope would get close to the complex shape. Image editors such as Paint Shop Pro and Photoshop Elements have a Displacement Map function. This uses one image as a template, or map, to distort another. Where an area is light in the map – in this case, the torso – pixels in the target image – the text – are pushed to one side. Where an area is dark, pixels are pushed the opposite way. The effect is to make the image look as if it's following the contours of the surface.

This faked texture mapping will work only with certain types of surface. It won't cope with deep holes or folds, such as a rippling flag. Lighting is also important. Because the displacement function interprets highlights as 'high' and shadows as 'low', the background must be evenly lit. To help you follow this tutorial, the image we've used here is included on our cover disc. We've used Paint Shop

Pro 9 (PSP9). Any differences in Photoshop Elements are mentioned in the text.

1 Open your picture. Using the Text tool, which is located on the left-hand toolbar with a letter A icon, you can add your lettering. Set the text colour using the Background and Fill Properties swatch in the Materials palette on the right. Set up formatting using the toolbar at the top before clicking on the image and entering your text. Drag the text's bounding box to position the lettering.

2 Text is created in a vector layer, but you need it as a separate raster (bitmap) image. Go to the Layers menu and choose Convert to Raster Layer. Press Ctrl-A to select all, then Ctrl-X to cut. You've left an empty layer, so remove this using Layers, Delete. Press Ctrl-V to paste your text as a new document. In Photoshop Elements, you need to use New, Image from Clipboard.

3 With this document active, go to the Effects menu and select Distortion Effects, Displacement Map. In Elements, use Filter, Distort, Displace. You need to choose which image will be used as the map, shown under Displacement Map in the dialog box. By default, it's the current

image, the lettering itself. Click this and choose your original background picture. In Elements you choose the map last, after clicking OK. It must be a saved file.

4 Mapping the lettering precisely to the background would make it look broken up. The displacement map must be blurred to smooth it out. In Photoshop Elements, you would need to do this yourself by making a copy of the photo and applying a Gaussian Blur. In PSP 9 a Blur option is built in. The default setting of 30 is fine.

5 On the right, make sure Displacement Properties is set to 2D Offsets. This works the same way as Elements' Displace function. Use the Preview button to check the effect, and adjust the Intensity so the text is visibly distorted, but not too much. Here 15 is fine. In Elements, adjust Horizontal and Vertical Scale instead.

6 Click OK, then select all (Ctrl-A) and cut (Ctrl-X) as in Step 2. Go to your original background image and paste the distorted lettering as a new layer (press Ctrl-L in PSP and Ctrl-V in Elements). Change the layer's blending mode. You can do this via the Layers palette or, in PSP, from Layers, Properties. Choose Hard Light mode and reduce the Opacity as necessary to allow both highlights and shadows to show through.

